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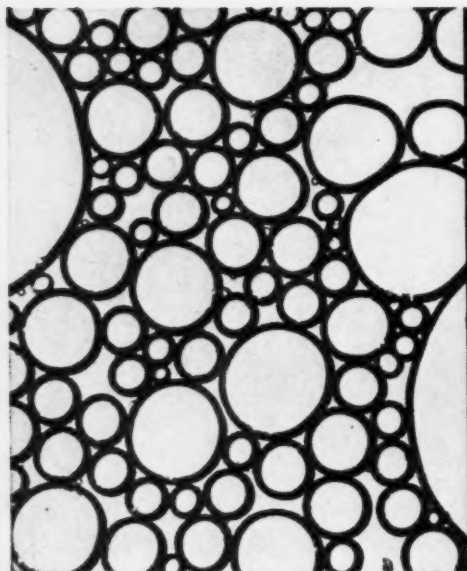
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VOLUME 59, NUMBER 11

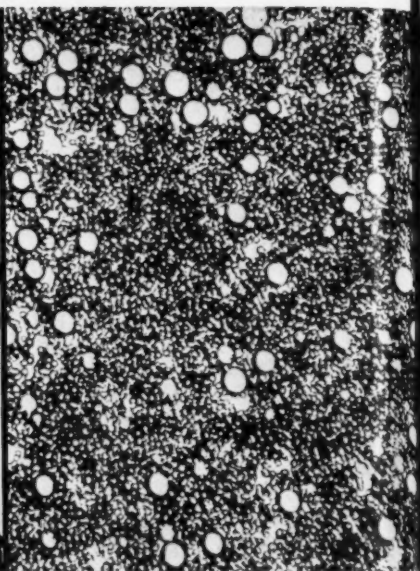
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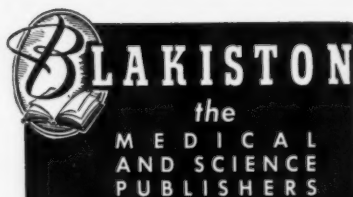
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Fee-Splitting

JOHN P. O'NEIL, M.D., *Chicago, Illinois*

Recently there appeared in the public press a statement that fee-splitting was becoming a serious problem. This disclosure came "when the board of regents of the American college of Surgeons sat down with newspaper science writers in an unprecedented meeting to lay the entire problem in the open." Doctor Loyal Davis, head of the department of surgery at Northwestern University and a member of the regents, said—"There is no question but that fee-splitting is on the increase in Chicago and surrounding areas." No other cities were named. Doctor Everts Graham of St. Louis, president of the regents, declared: "I regret to say that in certain areas fee-splitting is widely practiced." Doctor Ochsner of New Orleans pointed out that many young men face a "dilemma" in starting a practice in a competitive city where fee-splitting is rampant.

Just what is meant by the term fee-splitting? What does it connote?

What implication does it leave in the public mind? These are questions to be answered. If it leaves in the mind of the public the impression that it is being overcharged for medical or surgical services rendered to them, then the medical profession suffers untold harm. If it lauds the surgeon as such and belittles the non-operating physician in that same public opinion — that is equally false. Knowledge of disease entities, evaluation of symptoms, diagnostic acumen, recognition of gross pathology, recognition of complications as they may arise—these are the hallmarks of both equipped physician and surgeon.

Life is this world's most precious gift. Surely the non-operating physician who recognizes the danger to life, to happiness; who, because of his diagnostic ability and foresight, sets in motion the necessary procedures to bring about recovery; who safeguards the physical, mental, and material interests of the patient, is

entitled to adequate compensation for services given. Both attending physician and operating surgeon give their all to preserve life and usefulness in every patient they administer to.

We do believe the public has an erroneous idea on this subject of fee-splitting. We believe much of this misinformation is based upon unfounded statements and conjecture. That some fee-splitting occurs is true, but that it is a universal practice—that we do not believe.

Two factors enter into this problem. One is a moral question, the other, economic. If the patient is charged according to that individual's ability to pay for services rendered, that is right both from a moral and from an economic standpoint. This we believe is an almost universal practice by the profession. If both attending physician and operating surgeon submit a combined bill and the patient understands that in paying that bill, both physician and surgeon are remunerated for their services in that particular instance of illness, that too is morally and economically right. Both safeguard the patient's interests; the one by pre-operative diagnosis, the other by operative technic, and both by post-operative care. Their combined knowledge and experience is given in every instance.

That in isolated instances the operating surgeon may charge more than he otherwise would, and returns some of that fee to the physician referring the patient, is true. That is morally wrong, and economically wrong. We cannot subscribe to the impression that such practice is common. We think it is the exception. Much harm has been and is being done by such publicity. After years of practice, both as a general practitioner and as a specialist, as one who has referred many patients

to other surgeons for particular type of surgery, never have we encountered an instance where objection to a combined bill was made, or one in which the operating surgeon increased his fee.

The ethics of the medical profession, by and large, are at least as high as, if not in most instances, higher than those of other callings, professional, industrial and commercial. The physician gives years of training and thousands of dollars to equip himself to practice medicine. His is an exacting calling. He works for many masters, for uncertain hire, and at all times of day and night. He has no pressure groups to increase his compensation for services as the cost of living and carrying on his practice increases.

When a single bill for services is rendered, one that covers the fees of both physician and operating surgeon, and the patient so understands — understands that the combined knowledge of both was used to bring about recovery — that is not fee-splitting. That is simple honesty. How the fee paid is divided by surgeon and referring physician is not the concern of any other individual, providing the fee charged is in proportion to that individual's ability to pay. It is reasonable that one who has much should pay in proportion, that one who has little or nothing should pay little or nothing. Seldom does a physician or surgeon refuse service to anyone because of inability to pay. A combined bill will remove this stigma from the profession.

Broad general charges unsupported by specific proof harms both the profession and the public, and tends to plant suspicion in the public mind and place the physician in a false position. Broad general indictments strike at shadow—not at substance.

II. Current Status of ACTH and Cortisone

Specific uses and contraindications of these drugs are presented in the second part of this timely article.

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Since corticosteroid therapy is largely without rationale, except in conditions for which it represents true substitution therapy, the indications are tantamount to weight of evidence gained from repeated clinical trials in various disease states. As Hench so aptly stated in his Nobel lecture:

"Cortisone and ACTH today represent unframed pictures. No boundaries can yet be established to define either their full potentialities or their limitations. These hormones still belong to the physiologist and to the clinical investigator as much as, if not more than, to the practicing physician."

RHEUMATOID ARTHRITIS

Rheumatoid arthritis, particularly the acute form, is far and wide the most firmly established indication for hormone therapy since several thousand such cases have now had critical evaluation of response to therapy. Protracted observation of patients with rheumatoid arthritis has somewhat leveled earlier enthusiasm. Early and severe relapse of

the disease after cessation of hormone therapy is too often the rule, even after prolonged treatment or even in patients with disease of brief duration.

The difficulties multiply in some cases in which a severe and prolonged "post-cortisone withdrawal syndrome" occurs. So we have it that even this most responsive of all diseases to ACTH and cortisone is not infrequently beset with enough failures to stimulate the astute clinician to ask himself the following two questions before considering his patient for corticosteroid therapy (Freyberg *et al.*):

- (1) "What will happen when cortisone (or ACTH) is administered?"
- (2) "What will happen when the hormone is discontinued?"

We owe our patients this consideration.

ACUTE RHEUMATIC FEVER

Perhaps the second most important indication for corticosteroid therapy is acute rheumatic fever. It is generally agreed that early administration is by far the most reward-

ing factor in obtaining beneficial results. Polyarticular symptoms, tachycardia, heart murmurs, prolonged P-R intervals, fever, and sedimentation rates all rapidly improve in most cases treated within the first two weeks of the disease. Whether permanent cardiac damage is actually prevented is a problem which must await solution some three years hence. In general, it may be said that the longer the disease exists before therapy is instituted, the less the degree of recovery. However, the inherent duration of the disease is believed to be unaltered by hormone therapy.

Barnes suggests the following dosage schedule for cortisone in acute rheumatic fever:

1. 200 mg. daily for one or two weeks, until the acute stage is largely suppressed.
2. 100 mg. daily for the next two to four weeks.
3. Thereafter, 75 mg. daily, or 100 mg. on alternate days until the disease appears to have run its complete course.

Unless more than a slight increase in heart rate and sedimentation rate occurs after cessation of therapy, resumption of treatment is probably unnecessary. Severity of the disease, response to therapy, and degree of undesirable effects observed are the chief criteria for dosage. Thus, Bell *et al.* found it necessary to give 2,000 mg. in two days to a patient with severe pancarditis, and observed no untoward effects. Extreme caution is mandatory in such cases.

In a recent report on the effect of ACTH and cortisone in eighteen cases of rheumatic carditis, Kuttner *et al.* observed definite improvement in the general condition of all patients. Favorable effects were most pronounced in the acutely ill patients. In twelve cases, murmurs

indicative of organic cardiac disease were still in evidence from two to nine months after cessation of hormone therapy. In two critical cases, the hormone was considered life-saving. These authors believe there is probably no advantage to using massive doses of cortisone or ACTH so long as enough is given to control fever and restore normal values for laboratory criteria of activity, such as the erythrocyte sedimentation rate, the C-reactive protein test, and gamma globulin. They further speculate that the hormones may decrease scarring of the endocardium and myocardium by suppressing the cellular reaction to inflammation. It is certain that their long term effects cannot be brought into clear focus for some time to come.

ACUTE LUPUS ERYTHEMATOSUS DISSEMINATUS

The use of cortisone and ACTH in acute lupus erythematosus disseminatus represents a dramatic innovation in therapy for patients with this usually fatal, although infrequent, disease. A relatively large number of published case reports attest to the efficacy of these hormones in alleviation of signs and symptoms, including the dermatologic manifestations, fever, leukopenia, anemia, arthritis, renal involvement, and disappearance of the L. E. cells of Hargraves. Indeed, a number of remissions have occurred in cases which in all likelihood would have terminated fatally in the absence of hormone therapy. The remissions are usually temporary and continued or repeated courses of therapy must be resorted to.

Dr. R. C. Painter and I have been observing a twenty-nine year old woman since June, 1951, in whom the disease initially pursued a furious course, following an insidious onset. For several weeks it appeared that

cortisone therapy (even in large doses) was a hopeless failure. Gradually the critical phase subsided, all clinical manifestations literally melted away and the patient has resumed her usual employment since November, 1951, without relapse. Cortisone was tapered off and discontinued during September, 1951. Since the diagnosis of acute lupus erythematosus disseminatus was unequivocal in this case, including exhibition of the Hargraves phenomenon, we anticipate that a recurrence is probable sooner or later as permanent remissions are extremely rare (Forsham).

The dosage schedule recommended for this disease is approximately the same as that for rheumatoid arthritis (Rosenberg *et al.*). Irons *et al.* believe that these patients respond more quickly to ACTH than to cortisone, but prefer the latter drug for long-term therapy because in their experience a higher incidence of complications occurred with long-term ACTH therapy. While the hormones may prove lifesaving in the acute stages, cases of acute lupus erythematosus disseminatus appear to be singularly vulnerable to the exhibition of undesirable "side effects" from corticosteroid therapy.

BRONCHIAL ASTHMA

The treatment of severe bronchial asthma with ACTH and cortisone has often been gratifying, but failures are to be expected, particularly when attacks are not on a sensitivity basis. While Rosenberg reports that "the usual duration of complete remission following therapy has been longer in asthma than in most other diseases," the disease often becomes worse after discontinuing the hormone. Among twenty-nine bronchial asthma cases treated with ACTH, there was only one unsatisfactory result. The beneficial effects noted included reduction of dyspnea and wheezing, increase in exercise toler-

ance, improved appetite and sleep, reduction of sensitivity to certain allergens and foods, and a decrease in eosinophilia.

GOUTY ARTHRITIS

Acute gouty arthritis responds well to cortisone and ACTH in many instances, but more recently the trend has been to restrict hormone therapy only to those cases which fail to respond to colchicine for at least three reasons:

1. A second attack often occurs after the hormone is discontinued.
2. Colchicine is probably equally as effective therapy and does not possess the hazards incident to the corticosteroids.
3. Colchicine is obviously much cheaper and simpler therapy.

IDIOPATHIC ULCERATIVE COLITIS

It now appears that most cases of severe idiopathic ulcerative colitis which fail to respond to other medical measures deserve a trial of ACTH or cortisone therapy. The same may be said for certain cases of regional enteritis. Administered in these diseases, the effect of the hormones is often dramatic but still in conformity with the oft-quoted axiom that "they cure nothing."

With cortisone, Machella and Holan noted improvement in five of six patients (three each of ulcerative colitis and regional enteritis), the remaining case (ulcerative colitis) being refractory to the hormone. Signs of improvement included increased appetite, euphoria, disappearance of pain and stiffness, reduction of fever, weight gain, abatement of diarrhea, lowered sedimentation rate, and disappearance of blood in stools. Each of the five patients relapsed in from five to seventy-three days after withdrawal of the hormone. These authors believe the hormone saved the life of one critically ill patient.

Gray *et al.* produced remissions with ACTH in five of six ulcerative colitis patients. Relapses occurred in from two to nine months, but two such relapses were reversed by cortisone administration. It was noted that the fecal lysozyme titer (which is a good index of activity and extent of the disease process in ulcerative colitis) consistently fell after ACTH therapy in the five patients who improved.

Halsted *et al.* treated fifteen patients with ACTH, exclusive of other therapy. Three patients went into sustained remissions, ranging from five to twelve months. Twelve patients had a recurrence of pretreatment signs and symptoms shortly after ACTH had been discontinued. More or less clinical improvement was noted in all fifteen cases, but the authors wisely individualized their case observations. Three complications were encountered during therapy, namely, perforation of a duodenal ulcer, coronary thrombosis, and perforation of the colon. Beneficial effects were reflected in "a decrease or disappearance of the acute inflammatory process in the colon, improvement in nutrition and a better emotional state."

It has been speculated that stricture formation and fibrosis of the colon may be significantly retarded in ulcerative colitis through the inhibitory influence of ACTH and cortisone on fibroblastic proliferation. Amelioration of the inflammatory, systemic and toxic manifestations is also a characteristic effect of the hormones in idiopathic ulcerative colitis. However, since long continued therapy is so often necessary to insure a remission, the patient's ability to pay for these expensive hormones becomes a matter of prime importance. After impressive relief of symptoms, discontinuance of treatment because of ina-

bility to pay can be a source of profound grief, should a relapse occur. As Kinsell warns, "The addition of a flat pocketbook to his original disease represents no medical triumph."

From a study of thirty-three patients with chronic ulcerative colitis, Elliott *et al.* concluded that ACTH may be of therapeutic value in selected cases to relieve symptoms, enhance the tendency to remissions, and afford some protection against acute exacerbations. On the other hand, there appeared to be little evidence that ACTH is of much value in advanced chronic cases or in those already in remission. Since chronic ulcerative colitis is classically a disease of remissions and exacerbations, precise evaluation of results in hormone therapy is obviously difficult.

GENERAL COMMENTS

Space prohibits a detailed analysis of the voluminous literature on ACTH and cortisone therapy of specific diseases other than those mentioned above. Table 1 represents an attempt to group most of the diseases treated with these hormones to date in terms of expected response to therapy. This grouping is, of necessity, arbitrary and should not be interpreted too literally because much of the literature is in conflict or at least indecisive. There is little chance of getting into serious problems if the average practitioner restricts hormone therapy to those conclusively benefited.

Side effects—Undesirable side effects of these hormones usually can be minimized or avoided in most patients undergoing treatment if good clinical judgment is exercised. Every attempt should be made to establish the *minimum dosage required for optimal effectiveness*.

When less than 20 I. U. of ACTH or 50 mg. of cortisone are given

daily over prolonged periods, it is not necessary, as a rule, to follow the patient with frequent laboratory tests. The same may be said for courses of treatment of ten days or less (Forsham). In nearly all cases requiring larger or more prolonged doses, however, the clinician should be not only constantly on the alert for any and all known "side effects," but also be prepared to cope with them appropriately.

When currently utilized diagnostic and corrective measures in recognition and management of undesirable effects fail to prevent or correct them satisfactorily, the only safe alternative is tapering off the hormone lest the treatment becomes worse than the disease. The extent to which each case should be followed from this standpoint is of necessity an individual matter which attests to the clinician's skill and judgment.

Chemical disturbances — Of the chemical disturbances incident to excessive ACTH and cortisone dosage, probably the most difficult to recognize early is hypokalemia. Unfortunately, deficiency of potassium may be both frequent and serious during hormone therapy unless proper precautions are observed. Rosenberg *et al.* reported that sixty-two of their eighty-two patients showed a fall in concentration of serum potassium while on ACTH therapy. In forty-five patients values were below 4 milliequivalents per liter (the lower limit of normal). From 3 to 5 Gm. of potassium chloride were administered daily to combat the hypokalemia in these cases.

It is generally agreed that from 2 to 4 Gm. of potassium chloride daily is safe prophylaxis against hypokalemia with minimal risk of inducing the opposite extreme, especially when given orally. However, when reasonable doubt exists, it is safest to check carefully the clinical fea-

tures of the patient, serum potassium levels and serial electrocardiograms. Tall, narrow T-waves, widened QRS complexes and often absent p-waves denote *hyperkalemia*. Lowered (or inverted) T-waves, depression of the ST segment, and lengthened Q-T interval are features of *hypokalemia*. When potassium equilibrium is restored, the tracings usually return to normal.

Early depletion of potassium is reflected only vaguely in mild symptoms such as weakness, drowsiness and loss of appetite. Since the normal adult requires about 4 Gm. of potassium daily, inadequate food intake, vomiting or diarrhea may readily induce a deficiency in patients receiving ACTH or cortisone. A high-protein, low-salt diet is good prophylaxis, especially in cases receiving large doses of hormone. If potassium is replaced intravenously, not more than 2 to 4 Gm. per liter should be administered at a rate of 12 cc. per minute, or less. *It should not be given intravenously unless it cannot be given orally.* Immediate results cannot be achieved as it has been shown that as much as fifteen hours are required for injected potassium to reach a state of equilibrium in the body. It must be remembered that kidney function must be intact during potassium administration to avoid the danger of induced hyperkalemia.

Potassium depletion is further enhanced by intravenous administration of saline solution during which the sodium ion in the infusion replaces the lost potassium in the cellular compartment, resulting in dangerous alkalosis. Further potassium is lost by increased renal outflow during such infusions.

When *hyperkalemia* is accidentally induced by over-treatment, potassium therapy should be stopped immediately and calcium gluconate or

TABLE 1
CURRENT INDICATIONS FOR ACTH AND CORTISONE

Group I OFTEN EXCELLENT RESPONSE		Group II OFTEN GOOD RESPONSE	
Rheumatoid arthritis		Chronic rheumatoid arthritis	
Acute rheumatic fever		Acute gouty arthritis	
Disseminated lupus erythematosus		Psoriatic arthritis	
Polyarteritis nodosa (early)		Asthma	
Addison's disease (cortisone)		Urticaria	
Adrenogenital syndrome (cortisone)		Erythema nodosum	
Panhypopituitarism		Exfoliative dermatitis	
Idiopathic hypoglycemia		Nephrotic syndrome	
drug sensitivities		Alcoholism	
Inflammatory eye diseases		Regional enteritis	
Allergic eye diseases		Severe burns	
Serum sickness			
Ulcerative colitis			
Reiter's disease			
Group III FAIR OR VARIABLE RESPONSE		Group IV USUALLY POOR RESPONSE	
Anorexia nervosa		Multiple sclerosis	
Pemphigus		Muscular dystrophies	
Dermatomyositis		Psychoses	
Scleroderma		Acute glomerulonephritis	
Sarcoidosis		Leukemias	
Acute leukemia		Lymphomas	
Multiple myeloma		Neoplasms	
Acquired hemolytic anemia		Thyroid diseases	
Pneumonias		Poliomyelitis	
		Syphilis	
		Chronic atopic dermatitis	
Group V DELETERIOUS EFFECTS (CONTRAINDICATIONS)			
		Adrenogenital syndrome (ACTH)	
		Cushing's syndrome	
		Diabetes	
		Hypertension	
		Osteoporosis	
		Heart failure	
		Peptic ulcer	
		Tuberculosis	
		Marked azotemia with subacute or chronic glomerulonephritis	
		Acute bleeding tendency	

chloride should be given intravenously as well as a 10 per cent solution of glucose in combination with insulin. Others recommend isotonic or hypertonic (3 per cent) infusions of saline. Doses of 12 to 15 Gm. of sodium chloride may have to be given before improvement occurs. Until clinical evidence of hyperkalemia disappears, from 15 to 25 Gm. of sodium chloride is recommended daily.

SUMMARY

An attempt has been made to pre-

sent a concise review of current trends in the use of ACTH and cortisone. This is by no means complete, but certain basic fundamentals of therapeutic indications and contraindications, routes of administration, and relative efficacy of these hormones are emphasized as minimum requisite knowledge for the busy practitioner. If it contributes to "the reasonably intelligent and safe, even though empiric, use of the hormones" (Hench), it will have served its purpose.

Nipple Discharge

Classification, diagnosis, and treatment of this relatively common condition are outlined in detail.

BERNARD A. DONNELLY, M.D., Alton, Illinois

SIGNIFICANCE

Nipple discharge is a relatively frequent symptom of a pathologic lesion in the non-lactating breast. Often, it is the initial symptom which brings the patient to the physician for treatment. A difference of opinion exists as to the significance of the discharge, and this is particularly true if the discharge is sanguineous. Some consider the discharge as an innocuous symptom requiring active surgical treatment, which may vary from local excision to mastectomy. Most observers place the greatest emphasis on the discharge rather than on the underlying pathologic lesion in the breast.

It is emphasized that identical lesions will cause different reactions. A papilloma may initiate a bloody discharge in one case, a serious one in another, and no discharge in a third. Likewise, the same type of discharge may be associated with lesions considerably different in character. Each patient thus becomes an individual problem, and the correct clinical significance of the nipple discharge can only be reached after a careful consideration of the particular situation.

ETIOLOGY

It should be remembered that the breast is not a static organ, but undergoes constant physiologic changes as the result of ovarian activity. These changes are manifested by a periodic cycle of hyperplasia and involution within the breast.

A disturbance of this cycle, usually a result of relative ovarian hormone overbalance, may produce excessive hyperplasia or delayed involution, and with it the various manifestations of epithelial hyperplasia and abnormal involution within the breast commonly known as chronic cystic mastitis. These changes may result in an accumulation and stagnation of exfoliative products within the ductal system.

CLASSIFICATION

The types of discharges generally fall into two categories, namely, those in which the character of the discharge is determined by an apocrine-like exfoliation and stagnation within the ductal system, and those in which hyperplastic or neoplastic changes in the ductal system influence the character of the dis-

charge. We can thus speak of the patient as having a "stagnation discharge" or a "hyperplastic discharge."

LESIONS PRODUCING STAGNATION DISCHARGE

Lesions of the breast which produce stagnation discharge are usually forms of chronic cystic mastitis without hyperplasia. The discharge is usually white, gray, yellow, green or brown and non-sanguineous in nature. Microscopic examination of the discharge shows it to contain desquamated degenerated epithelial cells, colostrum cells, lymphocytes, mucus, and protein precipitate. The discharge is frequently from more than one duct, may vary in color within the same breast, and is often bilateral.

LESIONS PRODUCING HYPERPLASTIC DISCHARGE

In the hyperplastic group, the underlying lesion is predominantly hyperplastic in nature varying from heaping up of epithelium producing small papillary invaginations to definite intraductal adenoma, papilloma or carcinoma. The discharge is watery, serous, serosanguineous or sanguineous. Microscopic examinations show red blood cells predominating. In addition, desquamated epithelial cells, tumor cells, lymphocytes and protein precipitate may also be present. Some of the ducts contain a bronze pigment resembling hemoglobin. Chemically, tests are positive for blood.

Another type of breast lesion which produces a characteristic discharge is the galactocoele, a form of retention observed in connection with obstruction of the larger lacteal ducts. The discharge is milky and persists after nursing of the child is completed. Microscopic examination re-

veals colostrum cells and desquamated epithelium.

A variety of lesions are responsible for nipple discharge. Chronic cystic mastitis, intraductal papilloma and carcinoma are the principal etiologic lesions, comprising 90 per cent of those patients with nipple discharge. Inflammatory lesions, fibroadenoma, plasma cell mastitis, Paget's disease and sarcoma have all been reported as producing nipple discharge.

I reported on a series of 115 patients who had sanguineous discharge.¹ Of these, sixty-one (53 per cent) were found on histologic examination to have a malignant lesion. The remaining fifty-four patients (47 per cent) had benign or precancerous lesions. What is most significant is that in all of the patients with a sanguineous discharge, histologic examination of the lesion showed evidence of epithelial overgrowth, namely, hyperplasia. On this basis it is important that it be determined in the initial examination if the nipple discharge contains blood. Its presence is an indication of hyperplasia and may be a warning sign of a precancerous or malignant lesion in the underlying breast. It is important to keep the relationship of sanguineous discharge and hyperplasia in mind when treatment of the patient with nipple discharge is considered.

DIAGNOSIS

The patient with abnormal discharge requires careful study in order to determine the nature of the underlying lesion. Such study includes a careful history, physical examination, microscopic examination of the stained smears of the discharge and transillumination of the breast. In the majority of cases,

1. Donnelly, B.A., *Ann. Surg.* 131:342, 1950.

these studies will reveal the correct clinical interpretation of the discharge and proper treatment may be instituted. Examination of the breast in these patients may or may not reveal the presence of a tumor. The patient without a palpable mass has produced the greatest difference of opinion among physicians as to proper treatment. In others, one or more masses may be present or the breast may present a diffuse nodularity. Again, obvious signs of carcinoma may be present. Except on those patients with obvious carcinoma, the routine in arriving at a diagnosis is essentially the same.

Some patients will state that they have a bloody discharge from the nipple when actually it is yellow or brown and non-sanguineous in type. The only way one can determine if the discharge is sanguineous is to find red blood cells on microscopic examination. A positive chemical test lends further confirmation. It is important to establish the sanguineous nature of the discharge, for in our experience its presence indicates that there is about 50 per cent chance that the underlying pathologic lesion is malignant.

Transillumination of the breast may be a valuable diagnostic aid. The method is based upon the varying translucence and opacity of different tissues. Fat is highly translucent; consequently, the breast transilluminates satisfactorily. Blood has an intense opacity. Thus, a papilloma with bleeding shows an opaque shadow. Such a procedure may be of aid in localizing a papilloma too small to be palpable or in revealing the presence of more than one papilloma within the breast.

The location of the involved duct can often be determined by careful palpation. Gentle digital pressure of the terminal ducts should be applied in a systematic fashion, beginning at

the periphery of the breast and examining the radii of the breast in a clockwise fashion.

TREATMENT

Inasmuch as a difference of opinion exists among physicians as to the significance of nipple discharge, there also exists a difference of opinion as to the preferred treatment for a patient with nipple discharge. The greatest controversy centers around the treatment of the patient who is bleeding from the nipple without a palpable mass in the breast. Some recommend only periodic observation of these patients until a definite mass presents itself in the breast. Others regard the whole breast with suspicion and recommend more active surgical treatment.

On the basis of my study of patients with nipple discharge, I am in accord with those authors who advocate more active surgical treatment rather than those who advise periodic observation of the patient with nipple discharge. My belief is based on patients in whom nipple discharge preceded a malignant lesion; patients who had nipple discharge but no mass in the breast who were observed for a period of time and then developed carcinoma and patients who showed a benign papilloma in one area of the breast and malignant in another. Since my report in 1950 I have seen a number of patients with nipple discharge and with only one exception have I changed my opinion as to the type of treatment necessary in these cases. This pertains to the patient with a discharge from the nipple but no palpable mass. I now perform an exploration of the ductal system with wide excision of the involved area and let my treatment be dependent upon the histological examination at the time of surgery rather than doing a simple mastectomy as I previously

advocated. I would recommend the following treatment for patients with nipple discharge:

Discharge from the nipple and no palpable tumor — At the time of operation a small needle is inserted into the involved duct. A sub-areolar incision or a radial incision over the needle is made. A wide excision of tissue surrounding the involved duct is carried out. This is examined by the pathologist in the operating room and, if necessary, a frozen section is examined. If there is any doubt as to the frozen section, no further surgery is carried out until finished paraffin sections are made and a definite diagnosis established. If the lesion is benign and the remaining breast normal to palpation, excision is all that is required. If there has been diffuse nodularity throughout the breast in view of papillomas being multiple in occurrence and the possibility of a benign papilloma occurring in one area of the breast and a malignant lesion in another, simple mastectomy would be recommended. If the lesion is malignant, radical mastectomy is the indicated treatment.

Discharge and palpable tumor — In the breast where a single palpable tumor is present local excision is recommended. If histological examination reveals a benign lesion, no further surgery is performed. If malignant, radical mastectomy is performed.

Discharge and diffuse nodularity — If the discharge is of the stagnation type and the clinical findings are

those of chronic cystic mastitis the treatment is dependent upon one's attitude toward the relationship of cystic mastitis and cancer. If the discharge is of the hyperplastic type with diffuse nodularity, simple mastectomy is recommended.

Discharge with multiple masses — In this type of patient the whole breast should be viewed with suspicion and simple mastectomy performed.

SUMMARY

1. Abnormal nipple discharge is a relatively frequent symptom of a lesion of the non-lactating breast.
2. In a general way, nipple discharge may be considered as falling into two principal groups, namely, stagnation discharge and hyperplastic discharge.
3. Chronic cystic mastitis, intraductal papilloma and carcinoma account for the majority of lesions producing nipple discharge.
4. Sanguineous nipple discharge, with or without a mass, is indicative of hyperplasia within the breast.
5. Treatment should consist of excision of any single palpable tumor with more radical surgery performed if indicated by histologic examination. Exploratory examination of the ductal system with as indicated by histologic examination is the treatment of choice in the patient with a hyperplastic discharge from the nipple without a palpable mass.

Recent Advances in Pediatrics: Diagnosis and Treatment

*Greatest advances have been made
in cardiology, prophylactic procedures, and
diagnosis of erythroblastosis foetalis.*

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CONGENITAL HEART DISEASE

Recent dramatic advances in the definitive surgical correction of congenital anomalies of the heart and great vessels have been made possible by basic advances in the diagnosis of these anomalies and an increased understanding of cardiovascular physiology.

The new diagnostic technics, when combined with a careful history and physical examination, enable more accurate pre-operative diagnosis.

Angiocardiography—The injection of any one of a number of radio-opaque iodine preparations into the circulation permits visualization, through serial roentgenograms, of most of the great vessels and of the various cardiac chambers.¹ Safer dyes and special roentgenographic machines have made possible split-second serial photographs of the progress of the dye through any given circulatory area. The dye may be injected into the great veins leading to the heart, or into the aorta or other major arterial channels. The injection is made either directly through a needle, or through a catheter which has been introduced surgically into the vessels leading to the heart.

Cardiac catheterization—The introduction of long plastic or rubber

catheters by way of the veins into the heart, and thence into the pulmonary or arterial circulation, now allows direct measurement of the pressure within the various cardiac chambers and great vessels, as well as the withdrawal of blood samples in order to determine the oxygen content. Together with findings of roentgenograms, electrocardiograms, and clinical data, the pressures and oxygen content enable surprisingly accurate determinations of the cardiac physiologic processes and anatomic aberrations.

Cardiac fluoroscopy—When combined with the barium esophagram, this method now supplies more definitive evidence of the existence of some anomalies.

Direct-writing heart sound recorder—This new device allows more accurate objective interpretation of cardiac murmurs.²

SPECIFIC ANOMALIES NOT PREVIOUSLY AMENABLE TO OPERATION

Patent ductus arteriosus—Surgical intervention now is indicated in all cases, since the operative mortality rate has dropped to about 1 per cent in uncomplicated cases. Complete

1. *Advances in Pediatrics*, Vol. 5. Yearbook Publishers, 1952.

2. Rushmer, R. F. et al., *Am. J. Dis. Child.* 33: 733, 1952.

division, rather than simple ligation, is the method of choice. Penicillin in massive doses should be given both pre-operatively and post-operatively in all cases in which superimposed subacute bacterial endocarditis is present. The operation should not be delayed after diagnosis is made.

Coarctation of the aorta—Aortograms now allow exact visualization of the site and type of coarctation present. Excision of the stenosis in the "localized type" and primary anastomosis has been amply proved of value. More recently, to bridge the longer gaps in the "diffuse type," preserved aortic grafts taken from material obtained at necropsy have been used, and some have now been functioning for more than three years.

Aortic rings—Aortic rings and other vascular anomalies in the chest usually cause symptoms by the presence of a ring or abnormal position compressing the esophagus or trachea. Barium esophagrams have proved of great value in helping establish the preoperative diagnosis. Division of the ring or displacement of the offending vessel results in a striking alleviation of the symptoms.³

Cyanotic heart disease—The tetralogy of Fallot may now be alleviated by the use of several surgical techniques all designed to increase the blood supply to the lungs. The original work of Blalock, Taussig, and Potts⁴ achieved this by means of an extracardiac shunt, in which anastomosis of the aorta or one of its branches to the pulmonary artery is carried out. More recently, direct surgical attack on the pulmonary valve or infundibular stenosis has been made by Brock and others,⁵ with division of the valve

or resection of part of the infundibulum. This approach has also been used with success in pure pulmonary stenosis.

MEGACOLON (HIRSCHSPRUNG'S DISEASE)

The diagnosis of megacolon, or Hirschsprung's disease, has been facilitated by the recent roentgenologic observation that patients with this disease have a narrowing of the rectum just proximal to the anus. It is now believed that this constricted portion is the abnormal segment of the bowel, with the dilated portion proximal to it showing only a compensatory hypertrophy and dilatation. Pathologic studies of the constricted distal segment reveal the absence of all parasympathetic ganglion cells in the intramural plexuses, while these cells are present in the dilated portion.

Surgical removal of the constricted segment of rectum has brought about a return of normal bowel function in these cases. Swenson⁶ and Hiatt⁶ have popularized the abdominoperineal pull through operation.

ERYTHROBLASTOSIS FOETALIS

The hematologic confirmation of the clinical diagnosis of erythroblastosis foetalis has been greatly clarified in the past few years, although renaming of the Rh groups C, D and E has led to some confusion. Anti-Rh titers in the mother (saline, serum albumin, and blocking antibodies), the Coombs test on the infant, and careful serologic study of the blood groups of both mother and infant now can demonstrate the type of incompatibility present and may be used to follow the progress of antibody formation in the mother during the period of gestation. The appearance of antibodies in the

3. Hanlon, R., *J.A.M.A.*, 149:1, 1952.

4. Leininger, C. R., Gibson, S., and Potts, W. J., *Am. J. Dis. Child.* 81:465, 1951.

5. Brock, R. C., *Brit. M. J.* 1:1121, 1948.

6. Swenson, O., *Pediatrics.* 8:542, 1951.

mother from four to eight weeks prior to term indicates a fairly good prognosis, while their appearance as early as the fifth month generally denotes a grave one.⁸

Exchange transfusion—The use of exchange transfusion as a life-saving measure has been amply demonstrated in many medical centers. In addition, it has been recently shown that by minimizing the tendency for erythroblastic infants to become markedly jaundiced, exchange transfusion results in a lower incidence of kernicterus.⁷ A second exchange transfusion carried out from 12 to 18 hours after the first is indicated if jaundice is still increasing after the initial exchange. A recent modification of the exchange transfusion technic is one in which the patient is bled and simultaneously transfused with from 100 to 150 cc. of compatible packed, RH negative red cells.⁹ This method avoids the introduction of large amounts of plasma and anticoagulants and the frequent concomitant reactions.

PREMATURE INFANTS

A large volume of literature on care of the premature infant has appeared in recent years. Of special excellence is the complete monograph by Dunham.¹² The feeding of premature infants is still the subject of some debate, but in general the use of high-protein, low-fat mixtures has been accepted, following the work of Gordon and others. An excellent new technic for feeding is the use of the indwelling polyethylene nasogastric tube, which may be left in place for several days.

This allows the shortening of intervals between feedings, minimal disturbance of the infant during feedings, and less skilled nursing care. Repeated gaves and the dangers of aspiration are eliminated.¹³

Various new incubators have been devised. The "Isolette" is one of the outstanding new units, providing facilities for control of temperature, humidity, and weight control and handling of the infant without removing from the unit or exposing to the outer environment.

RHEUMATIC FEVER

The standard laboratory procedures utilized in acute rheumatic fever have been augmented by the addition of the anti-streptolysin, antifibrinolysin, and antihyaluronidase determinations in the blood as presumptive evidence of recent streptococcal infection and subsequent bodily response to such infection. A high titer of antistreptolysin (over 1:500) one month or more after an acute infection seldom occurs except in acute rheumatic fever.

Of great interest now is the role of ACTH and cortisone in the management of acute rheumatic fever. These agents are of no value in the therapy of residual valvular changes that follow an acute episode, but whether they can prevent or minimize these sequelae is still not known.¹⁴ The administration of either drug in an acute case of rheumatic fever usually results in an abrupt lysis of the clinical syndrome, with a fall in fever, ESR, leukocytosis, and pulse. No new murmurs develop, and those present improve, as may findings as determined by the electrocardiogram. Exacerbation occurs if treatment is discontinued too early; hence, it is

7. Allen, F. H. et al.: *Am. J. Dis. Child.* 80:779, 1950.

8. Pierce, M. et al.: *J. Pediat.* 7:865, 1951.

9. Wiener, A. S. and Wexler, I. B. *J. Pediat.* 8:117, 1951.

10. Barba, W. P., and Carlioto-Munoz, J. *Pediat.* 39:750, 1951.

11. Schwartzman, J.: *J. Pediat.* 39:491, 1951.

12. *Premature Infants*, U. S. Government Printing Office, 1948.

13. Royce, S. J.: *J. Pediat.* 8:79, 1951.

14. Barnes, A. R., et al.: *Am. J. Dis. Child.* 82:397, 1951.

felt that the underlying disease process is unaffected by the drugs, and that only the reaction of the hosts is altered or suppressed.¹⁵ Cortisone or ACTH should be utilized in the management of all cases of acute rheumatic fever, and administered for thirty days, with a gradual withdrawal of the drug in the last week. Exacerbations should be treated again in a similar manner, until recurrence of symptoms no longer occurs on withdrawal of the drug.

Of even greater importance than the highly publicized drugs for the treatment of acute rheumatic fever is the accumulation of a large body of data concerning the prophylaxis of recurrent episodes of this disease.¹⁶ Ultimately, these episodes lead to the chronic cardiac involvement that today makes rheumatic fever the greatest crippling disease of childhood. Recurrences can be prevented in a high proportion of patients by the daily oral administration of either sulfadiazine or penicillin, for a minimum of two years after the acute attack if there are no cardiac findings and for five years if cardiac changes are present. Children are usually given 0.5 Gm. of sulfadiazine daily, or 100,000 units of penicillin administered orally once or twice a day. All acute respiratory infections should be treated promptly and vigorously by intramuscular injections of penicillin. Protection of the patient from streptococcal infection is of prime importance in the prevention of recurrences, and should be extended to members of the family also.

MENINGITIS

The addition of broad spectrum antibiotics has provided new and effective agents for the treatment of meningitis. While sulfadiazine is still

the drug of choice in the management of acute meningococcal infections, penicillin is also extremely effective, and terramycin has recently been used to great advantage.¹⁷ Influenzal meningitis responds well to combinations of sulfadiazine with either aureomycin or terramycin; neither the antiserum nor streptomycin need be used, and intrathecal therapy is unnecessary. Pneumococcal meningitis in children responds well to penicillin in large doses, as much as 1,000,000 units intramuscularly every 3 hours, without the use of intrathecal medication.

Tuberculous Meningitis—The therapy of tuberculous meningitis has produced varying results in different parts of the United States for reasons not well understood. The results of treatment in European centers has been much more favorable, with recovery rates as high as 90 per cent reported. In general, recovery rates in the United States have varied from 10 to 40 per cent. Treatment should consist of intramuscular administration of streptomycin accompanied by oral PAS and isonicotinic acid hydrazide for at least six months, and intraspinal administration of streptomycin for two months or more.¹⁸

PROPHYLACTIC PROCEDURES

Immunization against diphtheria, pertussis, and tetanus has been of established value for some time. Recently, however, it has become apparent that antigens for immunization against these diseases can be effectively employed at a much earlier age than previously thought possible. Several thorough studies have established the effectiveness of immunization early during infancy. This is particularly true when followed by a booster dose of antigen

15. Dorfman, A., et al.: *J. Pediat.* 8:603, 1951.
16. Smith, M. A., et al.: *J.A.M.A.* 149:636, 1952.

17. Hoynes, A. L., and Riff, E. R., *J. Pediat.* 39:151, 1951.
18. Lincoln, E. M., and Wilking, V. N., *Am. J. Dis. Child.* 82:655, 1951.

about six months after the initial series of immunization injections. The initial dose of the triple antigen (diphtheria-pertussis-tetanus) may be administered as early as six weeks of age, with the second and third injections at four to six week intervals thereafter. Booster doses six and twelve months later, and at three and five years of age, are then recommended.

Gamma globulin—Gamma globulin is of established value in the prophylaxis of measles, in dosages of 0.1 cc. per pound of bodyweight early in the incubation period. A lower dosage of from 0.02 to 0.05 cc. per pound usually results in an attenuated form of measles, and is recommended for all children more than two years of age who are not otherwise ill. Gamma globulin should also be administered to close contacts of patients with infectious hepatitis in the hope of preventing spread of the disease.

Gamma globulin is also felt to be effective in the prevention of rubella, or German measles, and should be given at once to any pregnant woman who is exposed to rubella. The high incidence of congenital anomalies in children born to mothers who have had rubella during the first trimester of pregnancy makes prophylaxis of utmost importance. Should rubella develop during the first trimester of pregnancy, a therapeutic abortion should be considered.

THERAPEUTIC AGENTS

ACTH and cortisone have been employed in a large variety of pediatric conditions, usually with limited or temporary results.¹⁰ Neither ACTH or cortisone has proved of value in inflammatory diseases of the eye. In hypersensitivity phenomena, such as asthma or serum reactions, these agents are of value in treatment of the acute symptoms

but do not affect the underlying disease process. Hence their use is not warranted in chronic hypersensitivity states, for instance, eczema or hay fever, except during a particularly severe episode. Their ultimate value in the treatment of rheumatic fever is still unknown, though it is felt by some that, in addition to affording symptomatic relief, there is a decrease in the incidence of permanent cardiac pathologic damage.

ACTH has been used with dramatic results in the nephrotic syndrome, producing remissions in no way dissimilar to the spontaneous diuresis which sometimes occurs. As many as three or four exacerbations have subsequently been treated with success. Good results are obtained if a small amount of ACTH, from 10 to 15 mg. is given once a day in a continuous intravenous infusion over an 8-hour period. This method saves about 75 per cent of ACTH and eliminates around the clock therapy. Treatment should be given for from 7 to 10 days.

Hyaluronidase—Hyaluronidase has been of great aid in administering hypodermoclyses to dehydrated infants, thus permitting the treatment at home and in the outpatient department of many patients that formerly would have required hospitalization for intravenous infusions. The injection of 500 viscosity units of hyaluronidase into the lumen of the tubing at the start of a hypodermoclysis (into the outer aspect of the thighs, interscapular region, or the anterior abdominal wall) will enable the area to be used effectively for about three days, though with diminishing effect.¹¹ Only isotonic solutions should be utilized. Hypodermoclysis in which hyaluronidase is used is from 5 to 14 times more effective than ordinary hypodermoclysis.

Management of Ureteral Stone

A study of the records of 423 patients with ureteral stone indicates that general practitioners can in the great majority of cases cope with this disease successfully if they follow a definite system of diagnosis, relief of pain, determination of contralateral function, control of infection, and prophylaxis. This also will enable them to decide when treatment by a specialist is imperative.

Kidney function tests and excretory urography are essential diagnostic procedures. Following the control of pain, the radiologic confirmation of the diagnosis, and reassurance as to adequate contralateral kidney function, attention should be directed to the prevention or elimination of infection. Urine examination here is the simplest and most important step. Most effective against both bacillary and coccal infection are the sulphonamides. Penicillin should be employed for severe coccal infection. Judicious selection and use of the proper antiseptics and antibiotics largely contribute to the successful treatment of patients with ureteral stone.

Indications for urologic consultation or referral are briefly summarized as follows: (1) inadequate or absent contralateral kidney; (2) intractable pain; (3) persistent infection or acute sepsis; (4) general deterioration; (5) persistent eleus; (6) large, unyielding stone; (7) small

irregular stone filed in upper and/or middle one-third of ureter; (8) doubtful diagnosis requiring retrograde pyelograms; (9) serious pre-existing obstruction; (10) lack of progress in passing the stone from any location; and (11) persistent nonfunction of affected kidney for more than 14 days.

The first nine of these indications are clear and positive arguments for referral and should be heeded. Fortunately, these conditions do not exist in the great majority of instances, so that a watch and wait policy can be followed with safety.

Minimum observations while waiting for the stone to be passed should include semi-weekly office visits to report progress and to permit re-examination of the patient; the latter should include microscopic inspection of centrifuged urine in wet amounts and in dry gram-stained preparations.

A flat film of the abdomen should be made weekly. Excretory urograms are mandatory if the stone remains for a month. Any change in the course of the disease calls for radiologic re-examination and general re-evaluation. Expectant treatment, including the use of pain-controlling drugs and antiseptics, may be continued indefinitely if proper control measures are taken.

(Prentiss, R. J., Mullenix, R. B., and Whisenand, J. M., *Calif. J. Med.*, 77:7, 1952.)

Diseases of the Eyelids

Commonly encountered in general practice, the more common conditions and treatment are covered in succinct form.

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CONGENITAL ANOMALIES

Congenital coloboma, or notching of the lid, varies in degree from a slight defect to a severe cosmetic blemish. Its correction is surgical. A far more common anomaly is that of epicanthus, a condition in which a vertical fold of skin at the base of the nose projects over the inner canthus. It causes concern chiefly because it makes a child appear cross-eyed. Upon looking to the extreme right or left, the cornea of the adducting eye is partially shielded, giving the child the appearance of a squint, or esotropia. In infants and small children, the corneal light reflex will disprove the presence of tropia. If the reflex from a small bright light fixated by an infant is directly over the pupil, the condition is apparent rather than real.

In older children, the cover test is more reliable. It is performed by having the child fixate a light and then pass a cover from one eye to the other. If the light fixated is at a distance of 20 feet, no movement would be expected from the uncovered eye. For an object at a distance of 20 inches, a small amount of inward moving of the uncovered eye is

normal. Epicanthus rarely requires correction for when the individual reaches adolescence and the bridge of the nose becomes elevated, the defect will be relieved spontaneously. In extreme cases, plastic surgery is used to rectify the condition.

In *blepharophimosis*, the palpebral fissure is narrowed laterally and covered by a vertical fold of skin. Since this condition cannot be expected to correct itself, surgery is indicated.

In *epiblepharon*, a horizontal fold of skin stretches across the lower palpebral margin, turning the lashes in. A few cases I have seen of this condition have occurred in overly fat infants whose cheeks protruded upward, and have been relieved spontaneously. Several other congenital anomalies are rarely encountered.

NEW GROWTHS OF THE LID

One of the most common growths of the lids is that of *Xanthelasma* which is an elevated yellowish lesion, especially prone to occur in females on the upper lid or at the bridge of the nose, usually being symmetrical. Since they do not be-

come malignant, their chief importance lies in the cosmetic defect they cause. If not too extensive they may be excised, but due to the strong propensity for new ones to appear, it is probably more conservative to protect the surrounding skin with vaseline and make one or more applications of bi-chloroacetic acid several days apart.

Molluscum contagiosum is a small tumor with a depressed center due to a virus infection which is communicable. When the center is removed, a sebaceous-like material may be expressed from it.

Fibromas, papillomas, keratoses, warts, and similar lesions also occur about the lid. They may be removed by diathermy or electrolysis, or, if on a free portion of skin, may be easily excised.

Vascular tumors are also found, being either of the type limited to the skin known as telangiectases or the deeper type with larger vessels, cavernosi. The telangiectatic variety may be treated by excision and skin graft. In the large variety radium, electrolysis or injection of sclerosing solutions may be used.

Basal and squamous cell carcinoma are common on the lid. When possible they should be excised or if irradiated, it must be remembered that the eye should be screened as a cataract may be expected to result from irradiation near the globe if it is unprotected. Melanomas of the lid should be excised radically if they show any tendency to grow.

ANOMALITIES OF POSITION

Normally the upper lid should cover approximately 2 mm. of the superior part of the cornea and the lower lid should be tangent to the cornea with eyes looking straight ahead. Ptosis or drooping of the lid

may be unilateral or bilateral, congenital or acquired. Since the levator is innervated by the third cranial nerve, it is common to find extraocular muscles of the same eye involved. Injury at birth is a common cause for ptosis. There is also the condition of primary atrophy of the levator or the condition may be neurogenic as from a third nerve palsy due to syphilis. Partial ptosis is one of the earliest findings in myasthenia gravis. A diagnostic test for this latter condition consists in the intramuscular injection of 1 cc. of a solution of 1:2000 prostigmine methyl-sulfate combined with 1/150 gr. of atropine sulfate.¹ If the condition is due to myasthenia gravis there will be a marked improvement in the ability to elevate the lid. The function of the levator muscle may be tested by applying strong pressure with the thumb over the brow to inhibit the action of the frontalis. Whatever elevation of the lid then occurs on attempting to raise the lid is due to levator action.

In non-progressive cases of ptosis, the decision as to the type of operation to be employed depends upon the power of the levator. If levator action is fair, then resection of this muscle is indicated. If the levator has no action, one must depend upon the frontalis or the superior rectus to provide the elevation. Operations that utilize the superior rectus are to be preferred over those utilizing the frontalis since a successful operation gives movement of the lid with the globe, but there is a possibility that a phoria or a tropia may be induced. Berke has recently reported a series of cases utilizing the superior rectus in which the ptosis was corrected without interference

1. Berens & Zuckerman; *Diagnostic Examination of the Eye*. J. B. Lippincott Company

with vertical muscle balance.² Pto-
sis may also be hysterical in charac-
ter.

Inability to close the lids is more
commonly seen in so-called Balls'
palsy, which is now said to be due
to ischemia of the facial nerve in
the canal, leading to edema and
pressure blockage of the passage of
nerve impulses. This condition is now
treated as a medical emergency if
seen within the first few days. Facial
nerve palsy is also seen following in-
tracranial operation or in parotid
gland resections for tumor. To pre-
vent exposure keratitis from devel-
oping, it is important that the pal-
pebral fissure be narrowed by a lat-
eral tarsorrhaphy.

Ectropion or turning out of the lids
may be cicatricial, or paralytic from
any affection of the seventh nerve
or from senile atony of the orbicu-
laris. Sagging of the facial muscles
in elderly persons often causes ever-
sion of the punctum. The epiphora
incidental to this sets up a vicious
cycle of wiping the eye lid down-
ward, which causes further progres-
sion of the ectropion. In paralytic ec-
tropion, a sheath of fascia lata may
be swung along the lid margin from
the inner to the outer palpebral lig-
aments. In mild degrees of punctum
eversion, cautery pucture on the con-
junctival side may be sufficient to
turn the punctum inward and this,
combined with upward facial mas-
sage with olive oil, may relieve the
condition. In cicatricial ectropion,
skin grafting is necessary.

Entropion, inward turning of the
lid, frequently follows irritating cor-
neal lesions which set up blepharo-
spasm, especially if the inferior bor-
der of the tarsus has lost its sup-
port. The condition is relieved in
some cases when the irritating le-
sion has healed or if it appears that

the condition may become perma-
nent, one may perform the operation
described by Fox³ and currently in
favor, in which a triangler area of
the inferior tarsus is excised base
down, combined with a small elipti-
cal excision of skin, fascia and orbi-
cularis muscle at the outer canthus.

INFLAMMATORY AND PSEUDO-INFLAMMATORY CONDITIONS

The two most common inflamma-
tory conditions met with in general
practice, or for that matter in the
office of the ophthalmologist, are
hordeolum, or sty, and the acute
chalazion which is an infection of a
meibomian gland or glands in the
tarsus. Since a sty is an infection of
the sebaceous glands at the root
of the cilia, its extent is limited to
the lid margin where they usually
open spontaneously and disappear
without leaving any trace of their
existence.

The acute chalazion is attended
by more pain and more edema. If
the latter condition is early, one is
justified in giving systemic antibiot-
ics combined with cold compresses
in an effort to limit the infection.
If upon everting the lid, however, a
white elevated area is seen in the
conjunctiva, relief can be afforded
by puncturing the abcess in a direc-
tion perpendicular to the lid margin.
After a chalazion passes through its
acute stage, it should be incised in
a direction perpendicular to the lid
margin and the contents removed by
currettage, for as long as the chala-
zion is allowed to remain there will
probably be recurrences of the in-
fection.

The occurrence of a series of styes
frequently is definitely related to re-
fractive errors. If diabetes has been
excluded and one can get no results
from correction of refractive errors,
local use of antibiotics combined

2. Berke, R. N.; *Arch. Ophthalmol.* 42:6, 1949.

3. Fox, Sidney A.; *Arch. Ophthalmol.* 46:4, 1951.

with desensitization with staphylococcus toxoid often proves helpful. Whether it is the time involved in desensitizing or the product that works is not known, but I feel that I have seen some definitely good results from the use of toxoid.

Blepharitis is perhaps the most common ocular ailment, it often occurring in families in two main forms, the first associated with deranged sebaceous gland function and that associated with bacterial infections as Staphol and Pneumococci. In the treatment of this condition, persistence is the key to success. Cold cream or soap and an antibiotic applied regularly two or three nights a week and the application of 2 per cent solution of silver nitrate to the lid margin in the physician's office is often helpful. In cases associated with ulceration of the lid margin, bacterial desensitization is indicated.

Sensitivity to drugs may cause a reaction in the skin of the lid that looks inflammatory. Due to their more frequent use, atropine sulfate and penicillin are the chief drugs causing reactions.

DERANGEMENTS OF THE CILIA

The congenital affliction, distichiasis, is characterized by a double row of cilia, one growing anterior and the other posterior which places the cilia in contact with the cornea. In trichiasis, the cilia have no regularity of formation, so that some are in contact with the cornea. This condition can result from scarring diseases of the conjunctiva, such as trachoma, burns, marginal chalazia, and lacerations. Where the cilia are few in number, that is, no more than three to five, the hair follicle can be destroyed by the application of electrolysis, inserting a small needle along the shaft of the cilium. If

several cilia are involved, they will have to be kept constantly epilated or one of the various type of operations carried out for entropion used.

The lashes may become discolored as a result of sympathetic ophthalmia or in the uveitis seen in the Vogt-Koyanagi syndrome.

Crab lice occasionally occur upon the lid margins, where they deposit their eggs on the shaft of the cilia. Occasionally an adult louse may be found in which case one can see the excrement, which is black in color, at the base of the cilia.

INJURIES OF THE LID

While not strictly conforming to the subject of this paper, there are two seemingly simple injuries of the lid most often first seen by the general practitioner. The first of these is laceration of the lid, perpendicular to its margin. Unless an elliptical piece of tissue is removed from each side of the laceration the lid will heal leaving a notch. The cut edges of the tarsus should then be approximated, using 6-0 chromic cat gut on each side of the laceration, finally closing the skin and conjunctiva over the sutures with a separate suture of the same material or 6-0 black silk. Through and through sutures will result in inadequate approximation. The suturing should begin at the palpebral margin of the tarsus.

The other injury to the lid is that of laceration of the lower lid at the inner canthus. The common site of the lid to tear is between the punctum and the inner canthus, tearing through the inferior canaliculus. The easiest time to repair the canaliculus is when the wound is fresh. A piece of polyethylene tubing as large as can be passed into the dilated punctum should be placed in the lumen of the torn canaliculus and the ends approximated and sutured, using 6-0 gut. The skin is then closed over the anastomosis.

AIDS IN DIAGNOSIS

Staphylococcal Skin Infections in the Nursery

Staphylococcal infections form the greatest hazard in the newborn nursery, inasmuch as the number of bacterial strains resistant to antibiotics is constantly increasing. As a way out of this predicament the authors adopted the practice of subjecting the babies at regular intervals to a kind of "surgical scrub" with pHisoHex (pHisodern with hexachlorophene 3%). The bacteriostatic effectiveness of this preparation was found to be more enduring than that of other agents in use.

The following technic was adopted: the face was washed with clear water only. Head and neck were lathered with pHisoHex and then rinsed and dried thoroughly. Arms, chest, abdomen and back and legs were treated in the same way. Finally the baby is placed in a basin of warm water (100-105° F.) and is rinsed and dried completely. Special care is taken that the pHisoHex reaches the creases of the neck, axillae, groin, etc. A complete bath is given 24 hours after delivery and then every second day during the remainder of the hospital stay.

As a result of this practice, staphylococcal infections in the nurseries have been reduced from 6.54 to 0.63 per cent.

(Farquharson, C. D., Penny, S. F., Edwards, H. E., and Barr, E., *Canad. Med. Assn. J.* 67: 247, 1952.)

Sodium Values of Foods

The increasing use of low sodium diets in the treatment of edematous and hypertensive states has prompted the careful scrutiny of the published tables on the sodium content of foods and also has led to the formulation of new methods of sodium analysis. Examination with the Beckman flame spectrophotometer of the sodium content of thirty-six foods variously prepared (e.g., fresh vs. canned foods), revealed wide variations with the published data. It is therefore recommended that the flame photometry analysis of foods with respect to their sodium content be extended.

(Irwin, B. L., and Schuck, C., *J. Am. Diet. Assn.*, 27:98, 1951.)

Effect of Sweating

The sweating which induced a loss of body water accompanied by a relatively small loss of electrolytes in seven normal and in eight hypertensive individuals did not result in significant decreases in blood pressure. Determination of total body water, of blood volume, and of the intracellular and extracellular spaces indicated that the water loss was almost entirely from the extracellular space, while the blood volume remained practically unchanged.

The hypotensive effect of low salt diets is therefore attributed to the electrolyte depletion as well as to the water loss.

(Gibbons, T. B. and Chapman, C. B., *J. Lab. & Clin. Med.*, 39:420, 1952.)

Benemid and Sodium PAS

Sodium para-aminosalicylate (PAS) has proved of value when used alone, and especially when used in conjunction with streptomycin, in controlling tuberculous disease in the lung. The disadvantage is that the drug must be given at frequent intervals, daily, and over a long period of time. A dosage of 15 Gm. (and even 20 Gm.) daily is common. However, in such dosage, the drug frequently causes nausea and sometimes vomiting and diarrhea, which may necessitate cessation of the course of treatment. Instances of marked hypersensitivity have also been encountered.

Benemid produces the same effect as caronamide by *inhibiting* the functioning of the enzyme system which is concerned with the conjugation of PAS and glycine. Without this induced inhibition, the unimpeded conjugation of PAS and glycine would render the drug therapeutically inactive and result in its early elimination through the kidneys.

Benemid was therefore tried by the authors for the treatment, in conjunction with PAS, of twelve patients with tuberculosis of intermediate degree of severity. A dose of 0.5 Gm. of Benemid was given *half an hour before* PAS was administered. With this dosage of Benemid, the authors found that a daily dose of 12 Gm. of PAS was adequate to provide the required blood levels.

Benemid appears to be well tolerated and can be taken for prolonged periods, because its toxic effects are insignificant. The drug is excreted by the kidneys as a glucuronamide.

The addition of benemid therefore makes it possible to obtain and maintain effective blood levels of PAS with lower dosages than are required without this adjuvant.

(Simmonds, F. A. H., and Hess, E. V., *J. Brit. Tuberc. Assn.*, 33:138, 1952.)

Elasticity of Large Arteries in Hypertension

Intra-arterial pressures and pulse wave velocities were studied and measured in eighteen subjects whose auscultatory diastolic pressures ranged from 45 to 120 mm. Hg. Various methods were used to lower the blood pressure in the hypertensives and to raise it in the non-hypertensives, thus permitting pulse wave velocities to be calculated in all subjects at a common diastolic pressure. The pulse wave velocities were calculated for a diastolic pressure of 80 mm. Hg.

No significant differences were found between hypertensive and non-hypertensive subjects. It was therefore concluded that a defect of arterial elasticity as gauged by pulse wave velocity is not a factor in the pathogenesis of hypertension. The high pulse wave velocities found in hypertension are due to internal pressure and not to defective arterial elasticity.

(Adamson, J. P., and Doupe, J., *Canad. J. Med. Sci.*, 30:125, 1952.)

Foods as Sources of Riboflavin

Riboflavin obtained from the ingestion of ice cream, or directly from the pure vitamin itself, could be accounted for in the urine of young women in relatively larger proportion than was realized from the ingestion of soybeans, peas or toasted almonds as sources of this vitamin. As evidenced by residual undigested particles of the latter and greater amounts of nitrogen, fat and calories in the feces, the relatively lesser digestibility of the two legumes and of the almonds evidently makes them less valuable sources of riboflavin than their chemical composition would indicate.

(Everson, G., Pearson, E., and Matteson, R., *J. Nutrit.*, 46:45, 1952.)

THERAPEUTIC TRENDS

Paraminosalicylic Acid Concentrations

The authors found that probenecid ("Benemid") made possible the production of high plasma concentration of PAS with significantly smaller doses of this drug. Probenecid apparently acts by delaying renal excretion of PAS. This renal action seems to involve inhibition of an enzyme system which is active in combining PAS with glycine.

Presumably, the conjugate is excreted much more readily than is PAS. Inhibition of this enzyme system should therefore result in higher and more sustained PAS concentrations. Plasma concentration of PAS in patients receiving probenecid were found to be from two to four times higher than those obtained without this adjuvant.

Observations of fifteen tuberculous patients who received 12 Gm. of oral PAS daily before and after addition of 2 Gm. of probenecid revealed a 40 to 50 per cent enhancement in the plasma concentration of PAS after addition of probenecid. Reduction of the PAS dosage to 8 Gm. daily, together with 2 Gm. of probenecid, resulted in blood concentrations below those attained by either 12 Gm. regimen with or without probenecid, but of approximately the same level obtained with 3 Gm. of PAS administered four times daily.

The drug has proved relatively non-toxic. The optimal dose was found to be 0.5 Gm. given orally every 6 hours.

(Breitenbucher, R. B., Amatuzio, D. S., and Falk, A., *Am. Rev. Tuberc.* 66:228, 1952.)

Liver Extract and Vitamin B₁₂ in Treatment of Pernicious Anemia

Sixty patients with pernicious anemia were maintained in good health by injections of vitamin B₁₂. Twenty-two of these had previously been treated with liver extract for relatively long periods and were then given vitamin B₁₂ for at least two years. Eleven of the patients experienced significant increases in the red cell count while subjected to the latter therapy, and only one patient showed a statistically significant decrease. None of the patients gave evidence of a real decrease in the hemoglobin concentration.

Ten patients who had been treated with vitamin B₁₂ from the start of their illness showed significantly higher red cell counts and hemoglobin concentrations than did ten other patients who had received liver extract alone.

No untoward effects, such as sore tongue, gastro-intestinal disturbance, neurological involvement or leukopenia, were observed in the patients treated with vitamin B₁₂, although macrocytosis may persist. A maintenance dose of at least 50 mg. every two weeks is recommended for all patients with pernicious anemia not complicated by neurological involvement.

As specific advantages of vitamin B₁₂ may be mentioned the small bulk of the injections, their relatively low cost, and the absence of the risk of allergic sensitization.

(Blackburn, E. K., Burke, J., Roseman, C. and Wayne, E. J., *Brit. M. J.*, 2:245, 1952.)

Thiopentone for Anesthetic Outpatients

The author has used thiopentone-nitrous oxide—oxygen in over 200 consecutive unselected adult outpatients and has obtained best results in anesthetic resistant and poor-risk patients in whom anoxia was particularly undesirable. This method allows optimal oxygenation of the tissues, thus enabling nitrous oxide to produce its best degree of muscle relaxation. It is assumed that if 17 to 20 per cent of oxygen is administered throughout the major part of the anesthesia, anoxia is either minimal or absent.

The author's method consists of a sleep-dose of thiopentone, followed by nitrous oxide/oxygen anesthesia. The action of these agents is synergistic, for as observed by Organe and Brood, administration of about 85 per cent nitrous oxide and 15 per cent oxygen halves the amount of barbiturate required to produce anesthesia.

Atropine (gr. 1/100) is used to prevent excessive salivation and reduce thiopentone-irritability of the larynx. The amount of thiopentone needed as a sleep-dose for most patients is 2-5 ml. of the 5 per cent solution (0.1 to 0.25 Gm). For use as an inhalational supplement, the average dose of thiopentone was 3.75 ml. of the 5 per cent solution. The average oxygen proportion for the major part of the anesthesia was 19 per cent, and the average time to leave the hospital was 28½ minutes. The postanesthesia vomiting rate was 6 per cent. Regurgitation was not seen after thiopentone. Operative conditions were excellent in most instances and satisfactory even in resistant patients. Anoxia was not a problem.

(Franks, E. H., *Lancet.*, 2:466, 1952.)

Pollenosis in Children

Considerable disagreement exists as to the optimum pollen dose for preseasonal and perennial desensitization for pollinosis. No valid generalization as to such dosage can be based on skin tests alone. It is usually found, however, that the higher the degree of skin sensitivity the lower is the top dosage necessary to produce good results. A fairly accurate estimate of skin sensitivity is obtained by scratch tests made with 3 per cent pollen extracts. If these tests turn out negative, they are followed by intradermal tests made with 0.02 cc. of a 1:33 dilution of a 3 per cent pollen extract (600 Noon units).

For the child of average sensitivity, 0.5 to 1.0 cc. of a 3 per cent pollen extract (15,000 to 30,000 Noon units) is the optimum dose; the number of injections is about twenty. Younger children receive a top dose of 15,000 units.

The top dose should be reached just prior to the pollenating season. Weekly intracutaneous doses (same as top doses) are given during the season. Between seasons, a maintenance dose one-half the top maximum concentration is given every three weeks until 6 to 7 weeks prior to the next pollinating season, when the top concentration is gradually restored.

Most of the children experienced 80 to 90 per cent relief beginning with the first season of treatment. Some 50 per cent of the children could stop treatment in from three to five years of perennial high-dosage therapy. Asthma scarcely occurred in these patients.

It should be added that non-glycerinated pollen extracts were used; that is, the vehicle was the alkaline, 5 per cent dextrose solution recommended by Unger and Moore.

(Levin, S. J., *J. Pediat.*, 41:294, 1952.)

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S. F. Durst and Company,
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Cer-O-Cillin: Buffered tablet containing crystalline penicillin of potassium, 100,000 units, and calcium carbonate, 4.0 gr.

Used in: Oral penicillin therapy.

Dosage: Initial dose of 500,000 units followed by 100,000 units every three hours.

The Upjohn Company,
Kalamazoo, Michigan.

Tablets Bicillin L-A: Long acting tablets containing dibenzethylenediamine dipenicillin G.

Used in: Pneumococcal, streptococcal, and gonococcal infections.

Dosage: Two tablets daily.

Wyeth Incorporated,
Philadelphia, Pennsylvania.

Tryptar Aerosol: Crystalline trypsin.

Used in: Disease of bronchial tree in which hypersecretion and fibrin-mucinous material clog air passages.

Dosage: Initial, 125,000 units in 3 cc. of diluent by inhalation at least once daily. Repeat as required, provided enzyme concentration does not go above 45,000 units per cc.

Armour Laboratories,
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Kolantyl Gel: Liquid, containing in each 10 cc. beryl hydrochloride, 5 mg.; aluminum hydroxide gel, 400 mg.; magnesium oxide, 200 mg.; sodium lauryl sulfate, 25 mg.; and methylcellulose, 100 mg.

Used in: Treatment of peptic ulcer and relief of symptoms caused by gastric hyperacidity.

Dosage: Two to four teaspoonfuls (10 to 20 cc.) every three hours.

Wm. S. Merrell Company,
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Abboject Disposable Syringe: Filled disposable syringe containing 600,000 units of repository penicillin.

Used in: Mild to moderately severe penicillin-susceptible infections.

Dosage: As indicated.

Abbott Laboratories,
North Chicago, Illinois.

Tolyphy: Tablet, containing mephenesin, 0.5 Gm.; physostigmine salicylate, 0.35 mg.; and atropine sulfate, 0.2 mg.

Used in: Muscle spasm associated with disease of the joint.

Dosage: Not more than two tablets q.i.d. initially. Maintenance dose generally two tablets b.i.d.

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